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AN ECONOMIC STUDY OF RECREATION CONCESSIONAIRES ON THE NATIONAL FORESTS

SCHOOL OF FORESTRY · UNIVERSITY OF CALIFORNIA

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AN ECONOMIC STUDY OF

RECREATION CONCESSIONAIRES ON THE NATIONAL FORESTS

by

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I. INTRODUCTION

The use of private capital and management to provide many of the recreation services obtained from the national forests presents interesting, difficult, and important problems. Recent studies in the field of outdoor recreation, particularly on forest land, have emphasized the need for more activity in the public-private investment sector to provide recreation opportunities (e.g., 9, 16). Many writers on the demand and supply of recreation feel that the joint development of publicly owned land and water resources is important in the developing recreation market, and that it will become more significant in the future. These writers, and most public and private agencies, feel that much of the development is most properly done by private enterprise with private capital. While the "public interest" must be protected, they feel reasonable rewards should be received by the concessionaires that develop these resources.

Rapidly growing population, income, and other economic forces are causing proportionally greater outward shifts in demand. Consequently, any present difficulties with this system of supplying recreation services will be intensified in the future. There are alternative policies and programs which might more adequately deal with the expected increases in concessionaire activity. The issues in question have many points common to other sectors of the forest economy where public and private investment are mixed, such as national forest stumpage sales. Consequently the implications of this study may be applicable to other aspects of national forest management and policy.

Any problems of recreation concessionaires have to be framed in a value system in order to refer to them as "problems." Originally this study was prompted by the hypothesis that the concessionaires on the

national forests are more economically unstable than is desirable. The institutional constraints imposed, the quality of managerial talent attracted, and other economic factors were considered as possible reasons for the suspected instability. Not all Forest Service officials contacted agreed with the hypothesis, so the study was reformulated to consider explicitly possible value systems for judging concessionaire performance. Underlying most economic investigations are some normative objectives. The subjective premise of this study is that the Forest Service would benefit from a more explicit definition of their economic goals and means with regard to recreation concessionaires. The benefits of greater clarity are enumerated and analyzed.

The integration of public and private enterprise in the recreation economy presents two basic difficulties common to all situations where the public and private sectors interact. First, if a public sector exists in an economy, it has relationships with the private sector. Probably some groups feel they benefit by the existence and behavior of a given public enterprise, while other private groups feel that they are harmed economically or politically by the public enterprise in question. All private enterprise is affected to some degree by government activity. In addition to direct economic actions, the government controls private economic activity through anti-trust laws, food and drug regulations, zoning ordinances, and many other institutional restrictions. This situation suggests that the government sector of the United States is in some fashion omnipotent for all individuals and private concerns. As a result, there is little chance for the government to follow a neutral economic policy.

The second difficulty is to decide what should be the objective of the government's economic behavior. Related to this question is the

already noted need for a value system to judge the performance of concession units. Possible criteria for establishing a concession and guiding its behavior are considered in the section on Forest Service decision-making, and a method for evaluating ends-means choices is discussed.

Some changes are proposed which might improve the performance of concessionaires and of their capital sources. The changes concentrate on revision of the permit specifications to increase managerial responsibility, to decrease economic conflict between groups, and to reduce the economic uncertainly facing the concessionaires and the Forest Service. Educational effort is discussed in terms of its potential for improving concessionaire performance. Because little is actually known regarding the economic impact of outdoor recreation and its future place in forest management, several recommendations are made for possible research efforts. Until this research is initiated and some results are obtained, a reasonably complete discussion of goals and programs for the recreation concessionaire cannot take place.

Economics is concerned with man's allocation of scarce resources among competing ends. The purpose of any allocation process is to optimize some goal, be it individual or social. In recreation, the resources are becoming more scarce and the ends more numerous. The concessionaire is viewed in this context, and the analysis largely rests upon a verbal development of the economic environment of the concessionaire system. Some statistical evidence is utilized to support the hypothesis that the intensity of concessionaire problems will increase. While many of the hypotheses are not directly verifiable, the logic behind each construction is explicitly discussed and any intuitively based premises are noted.

Section II reviews the economic concept of demand and its relevance

to the concessionaire program. Section III is concerned with supply from the point of view of the concessionaire and his capital sources. In section IV, the Forest Service is analyzed as a supplier of concessionaire sites and as the policy-maker for concessionaire programs. The final sec- summarizes the hypotheses and material covered, and then recommends some future research efforts.

II. DEMAND

When economists speak of demand, they refer to an abstract model of economic decision-making. Demand can be defined as a schedule of mutually exclusive behavior patterns observed (or expected) relating the price of a good or service to the quantity purchased. Restrictive assumptions are made regarding other factors. Generally the prices of other goods and services, money income, distribution of tastes and preferences, income distribution, and time and place are given and remain constant. This schedule may apply to one individual, or may be aggregated to a defined consumer group.

Utility is a concept of individual satisfaction which the economist uses to construct models for predicting individual behavior. Individuals are assumed to be rational; it is assumed that they make economic decisions which attempt utility maximization. An economic model's predictive power depends upon its completeness and the volatility of the underlying determinants. The science of economics exists only if there are consistent decision-making patterns by aggregate groups which can be identified and predicted. Although statistically significant quantification is desirable, many models are actually designed and utilized for predicting qualitative changes, usually the direction of economic movement.

When predicting consumer behavior, the economist must at least consider the determinants of the utility function. If they appear stable over the period in question, he may begin predicting the outcomes under varying circumstances. However, many suspected behavioral inconsistencies by consumers are probably due to rapidly shifting tastes and preferences. Since World War II, an increasing segment of the consuming economy has achieved

incomes which allow discretionary spending, and major purchases of outdoor recreation are possible. When the economic outlook dims a bit, expenditures on recreation can readily be reduced. In a dynamic economy and society, the individual is constantly confronted with new items and ideas. In order for the dynamics to occur (e.g., economic growth), the individual must be willing continuously to re-evaluate and alter his behavior patterns to improve his position. Individual behavior patterns are likely to be most capricious in a dynamic sector such as recreation, and predicting their impact on any one enterprise may not be possible. Consequently, both the Forest Service and any particular concessionaire face a great deal of uncertainty.

Demand and value

The interest in demand for various forms of outdoor recreation is due, in part, to a concern with the definition of value. Demand is thought to be a useful concept for defining the value of a site in a given form of recreation use, in order to plan resource allocation. A great variety of value systems may be discussed regarding recreation, and the appropriate value system depends upon the context. Market prices, as an example, are monetary values which reflect the outcome of what may well be a most imperfect market situation. However, if a private landowner is considering the establishment of a recreation service like a campground, the value of his resources in this activity is determined by market prices. These prices may reflect imperfections in knowledge, institutional peculiarities such as the dominance of free camping on public lands, and other complexities not considered by the theory of perfect competition. Viewing economic values in terms of the market is the common approach of appraisers who might be ascertaining what a client would receive for his land if producing recreation benefits. Agricultural price supports, acreage allotments, and local tax structures are examples of institutional factors which affect the value of land.

The market price may not be an unbiased judgment by society regarding recreation or any other use of land resources. If the economist is not concerned with how monetary recreation values are generated, available market data can be accepted without further consideration. However, if he has some normative feelings regarding how the allocation mechanism for a recreation resource ought to operate, the market mechanism should be carefully evaluated. Simulated prices may be obtained using perfect competition models or other variations from the actual mechanism. The values

considered in any given context are not merely prices, but prices generated in a particular fashion. To be operationally useful, justification for such simulation must be given. The abstraction may be used as a close approximation of reality, or as an ideal towards which reality should be moved. If the latter, some consideration must be given to why and how. There may be sound, though normative, reasons for reducing market imperfections. However, some researchers have suggested perfect competition with little thought regarding its benefits. Methods of movement toward the ideal are significant because changes may not be possible. First, the methods may not be politically acceptable. There are many imperfections which cannot be corrected because the political costs to the instigators, their opposition, or to society as a whole are too great. Second, given technical reality, the methods suggested may not be feasible. Geographical distance, engineering problems, biological responses and any number of other essentially noneconomic factors may cause the imperfections found in the economy.

The institutional structure of public land management in this country reflects a heritage of free recreational use of the public lands. The Forest Service, National Park Service, Bureau of Land Management, and many other agencies sell the use of recreation resources at negligible prices or give it away free. This complicates any attempt to establish the value for land in recreation use, and alters the economics of recreation to the disadvantage of private owners and some concessionaires. Little incentive is established for private resources to enter many recreation markets.

No valid market information exists for many forms of recreational land use, particularly in forested areas. Hoch (8) argued that in a real sense recreation on the national forests has a zero value. A recreation resource

is used to the point where the marginal utility is zero, as the marginal disutility of spending money on a free good is zero. Although this point is well taken, two additional points should be considered. First, the use of overcrowded campgrounds, parks, and other free or nearly free resources is often rationaed on a first come, first served basis. If the rationing is effective, the marginal utility received is positive and above the monetary disutility. Prices, even if zero, are not at all relevant to the allocation process when rationing is effective. There are many campgrounds where Hoch's observation is ture, at least during the less crowded periods.

A second point can be drawn from Clawson's (5) contention that people purchase an entire experience when they partake of outdoor recreation. This includes the anticipations and preparations, travel to and from the area, and the subsequent memories, as well as the actual outdoor activity. Consequently, prices of recreation resource use may not affect the consumer's evaluation of the potential experience because of other, more significant, costs and returns. This implies that the aggregate demand for government or concessionaire operated campgrounds on the national forests is quite inelastic. If this is true, a wide range of monetary values could be charged for campsites with little change in the total consumption of these resources. The determination of the marginal value product is quite difficult when the supply schedule intersects an inelastic demand curve because a small error in quantity measurement can lead to a large price change. This would limit the usefulness of additional information concerning demand schedules. This is particularly true for Forest Service resource allocation in a multiple use management scheme where administrators want the marginal value product of inputs equal in the production of all forest outputs.

Elasticities

The definition of demand has led workers to consider two types of change. First, there are possible movements along the demand schedule or curve. Supply shifts with the demand schedule constant induce price changes of the good in question; and the intensity of such movements is measured by price elasticity.[1] The other type of movement involves actual shifts in the demand.

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[1] Price elasticity is defined as a ratio of the relative change in the amount of a commodity purchased to the relative change in price; i.e., $\frac{dX/dP}{X \quad P}$ or $\frac{P \cdot dX}{X \cdot dP}$. As an example, if the price of staying at a ski lodge drops from $10 to $9 per night ($dP/P = -0.1$), and the quantity purchased increases from four to five nights ($dX/X = 0.25$), the price elasticity for ski lodges is -2.5 (i.e., $0.25/-0.1 = -2.5$). The negative slope indicates the normal demand curve that slopes down to the right.

If the price of commodity B increases, the demand schedule for commodity A would shift to the right if people buy A instead of B. This situation occurs when goods are substitutes for one another. If they are complements (e.g., skis and ski boots), an increase in the price of B causes a shift to the left in the demand for A. In some cases, no response is found in the demand for A when the price of B changes. For shifts induced by price changes in other goods or services, cross elasticities can be computed for quantity changes in A relative to price changes in B.

Experience in other sectors of the economy indicates that income is an important factor shifting demand outward. The most intensive studies of income elasticities have been concerned with agricultural commodities and associated services.[2] It is increasingly apparent that the high income

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[2] Income elasticity is defined as the relative change in the amount of a commodity purchased relative to the relative change in income; i.e.,

$\frac{dX/dI}{X}$ or $\frac{I \cdot dX}{X \cdot dI}$. As an example, if an individual's income increases from $10,000 to $10,500 (dI/I = .05), and his skiing expenditures increase from $100 to $120 (dX/x = .20), his income elasticity for skiing would be 4 (.20/.05 = 4).

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elasticities are for services such as those provided by marketing concerns, restaurants, and entertainment facilities. It appears reasonable to believe that the income elasticity for the services provided by concessionaires is usually one or greater. Consequently, the sector serviced by concessionaires is expected to grow rapidly in the next few years, although direct quantification of the income elasticities is not possible.

A 1958 study (14) documented a growth rate in excess of 12 per cent per year for hotel and resort concessionaires on California national forests. The growth rate was still higher between 1958 and 1962. Projections with either income or population as the indepencent variable predict phenomenal increases in this sector by 1976 and the year 2000. Winter sports concessions averaged better than 10 per cent per year growth in California, with high projections for the future also. High correlation between population growth and income growth prevents statistical separation of these two forces regarding their influence on the rapid increase in outdoor recreation.

During the past 15 years when the use of camping, picnicking, and concessionaires was rising at ten per cent or more per year, real per-capita income of Californians rose at two per cent per year. Allowing for both population and income growth, the State's income increased at eight per cent annually. The more rapid increase of recreation use indicates that the income elasticity is greater than one, assuming no change in real cost. Certainly, other factors may have been significant, so the above

analysis does not verify the income hypothesis. However, the experience of other economic sectors provides additional evidence supporting this premise.

The contention that the demand for outdoor recreation commodities and services is income elastic in aggregate needs considerable refining. The data analysis indicates that the elasticity is greater than one for each of the four uses studied in the projections discussed later in this section. An increased understandingof the effects due to income distribution and income class would aid Forest Service land planning. Research on income elasticity should be directed toward specific services and toward the entire mix.

It could be hypothesized that as income rises, individual consumers tend to have lower income elasticities for specific services. This is consistent with the declining slope of the Engle function as income increases usually hypothesized for any good or service. At high income levels, the income elasticity for some outdoor recreation activities (e.g. camping), may be zero, or even negative. The knowledge of average elasticity by income class for a given service coupled with information on income distribution would greatly improve the predictions of future changes in outdoor recreation demand. Changes in the income elasticities for each service cause changes in the mix of outdoor recreation activities each consumer purchases as his income rises. As the per capita income level rises, the mix will become relatively more expensive if the elasticity hypothesis is correct. The quantity of services purchased from hotels, resorts, and back country packers should increase relative to the service of low cost recreation like Forest Service campgrounds. One might hypothesize an eventual decline in per capita use of campgrounds as real income rises considerably

higher than the present level.

Empirically, the income elasticity for any given service or of the entire outdoor recreation mix can be studied using cross-sectional or time series data. Time series data can be used to see if the per capita purchase of a given service changes as average per capita real income rises. Cross-sectional data can be used to investigate the change in per capita consumption associated with increasing income at any particular time. Both these methods may also be used to detect changes in the mix as income changes. Age is a factor which makes any such analyses more complex. Income usually increases, at least to some maximum, as a consumer unit ages. Young families not only have less income, but are more venturesome and willing to forego comfort for other benefits such as the close contact with nature. Perhaps statistical analysis could separate income, age, and the interaction effects. Only studies following specific consumer groups as their income changes will complete information on income elasticities.

Unfortunately, no data exist at present to either verify or refute these hypotheses. It is the type of information that can be obtained by the Bureau of the Census, the Michigan Survey Research Center, or several other institutions specializing in social science data collection. The expense of such an effort might be justified if a study could benefit recreation planning in several agencies or regions.

Faulty Demand Concepts

The field of outdoor recreation has just begun to receive attention from professional economists and other social scientists. The lack of data, the public sector's dominance, and the emotional nature of much of the policy discussion to date have complicated thought concerning demand. A brief review of some past efforts will clarify the conceptual demand for concessionaire services, and may help prevent application of some poorly conceived ideas to concessionaire problems.

The most intriguing approaches have involved a resurrection of the consumer's surplus concept. This concept requires the measurement of the area under the demand curve to the left of the price intercept (i.e., the shaded area in figure 1). The area bounded by the price line and the quantity intercept represents a value received by consumers for which they do not pay. Some argue that by measuring this area and adding it to the monetary value established in the market, the true value gained by society from recreation can be established. There are several reasons why this is a faulty approach to recreation resource allocation.[3]

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[3] The concept of consumer's surplus seems to have originated with a few remarks by Marshall in his Principles (13, pp. 124-137) which may have been misinterpreted by his readers. Friedman (6) suggests that even Marshall misunderstood the idea, and he modifies the Marshallian demand curve by holding real income constant rather than money income. With this definition, all movement on the consumer's utility map is along an isoutility curve.

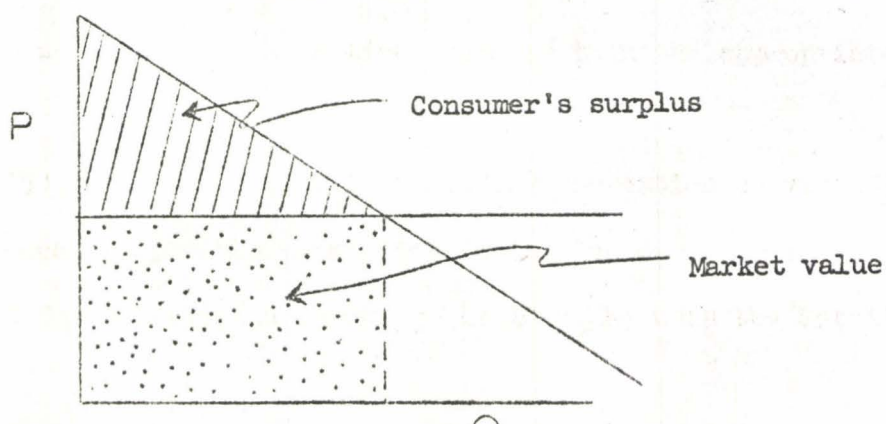

Fig. 1: The shaded area is consumer's surplus, and the dotted area is market value

First, few people suggest that one should allocate automobiles, beer, and other economic resources by the amount of consumer's surplus gained from each. Beazley (3) at least recognizes this problem and states that the same approach would have to be used for all inter-comparisons regarding recreation resources. He fails, however, to appreciate the full implications of this statement when applied to all of society's economic activity.

Second, every economic good has a value to the purchaser, and a completely exhaustive price mechanism would capture that amount for the seller. However, what was captured by one seller could not be used at the consumer's discretion to purchase some other commodity. There are certain goods, such as the basic nutritional-energy requirements and minimal shelter, with values which if captured would exhaust all the consumer's income. This would leave the consumer without any further purchasing power for other goods and services.

Third, the interpretation of consumer's surplus implied in recreation economics to date is that perfect price discrimination exists. Each consumer is separated from all others and from their successive purchases of a given commodity. The practical limitation alone casts aspersions on this concept. In any case, the pattern of purchases obtained from setting price at successively lower levels and observing the behavior of each individual already in the market, as well as those first entering, is not a demand curve representing mutually exclusive behavior patterns. The successive purchase curve would be, by definition, steeper than the appropriate demand curve.

Clawson (5), when suggesting that outdoor recreation be viewed as an entire experience, proposed a method for estimating demand for and value of recreation. Unfortunately, in pursuing his idea, he uses the Hotelling (17)

concentric circle approach which violates many of the assumptions of the demand concept. This approach tabulates the number of users in various distance zones from a recreation area and their costs of utilizing a particular experience--say a national park. This information is then graphed as a cost per visit relative to the thousands of visits per hundred thousand population in each distance zone. From this information a curve is constructed which supposedly reflects the quantity effect of different price levels at the park entrance. This transfer makes the error of Clawson's efforts difficult to isolate. First, the price axis does not reflect the cost of utilizing this experience except in the limited sense of choices made at the park entrance. These choices are probably negligible because of prior knowledge of entrance costs which was included in the original planning decisions and their relatively low proportion of the total cost of a visit. Second, the demand curve is a schedule of mutually exclusive behavior patterns, and the basic geographical cross-section data are not of such a nature. Third, the assumption of the market existing in a given time and place is violated. Fourth, there is an implicit assumption of the homogeneous distribution of tastes, preferences, income, and alternative recreation opportunities across the United States. The differences in these factors from area to area are significant. Perhaps Clawson's approach has some operational meaning such as calculating the elasticity of purchases with respect to distance, but it is not useful for constructing demand curves or evaluating recreation.

Statistics and Concessionaire Demand

Econometrically oriented researchers face the same difficulty as appraisers--lack of price and quantity information. The quantity consumed is measured in the questionable units of man-days or visits. This information is often derived on a "quesstimate" basis by local land management authorities. Another difficulty in any demand analysis is quality which separates commodities just as meaningfully as does form, end-use or other characteristics.

The significance of quality differences must be established in the context of a particular problem, but a general approach can be discussed. One approach would be an arbitrary classification of quality. In campgrounds one might have grades dependent upon the number of users per acre per year, and shift camping areas from one class to another as the use level changed. One problem of such grades would be the current lack of knowledge and consequent predictability of consumer's tastes and preferences. The general public is often more gregarious by nature than the recreation land planner who views isolation as a major part of the experience. On a recent visit to a national forest trailer camp, an example of this was brought to the author's attention. In designing this area, the Forest Service had taken particular care to isolate the individual units with vegetative screens between each family unit. When the area was opened, however, the land managers found that families tended to double or even triple up in one family unit in order that friends or relatives could be together for their outdoor recreation experience. The foresters were shocked at first, but they quickly realized their error in predicting consumer desires. The camp was redesigned to provide effectively for multiple family groups as well as single family trailer areas, and the experience passed on to others in the

Service. In this particular situation, quality from the "average" consumer's viewpoint improved as use per unit area increased. As experience grows, quality classes should be developed which have a relevance to the economic environment and allocation process.

The construction of theoretical demand equations and the estimation of their parameters by least-squares or more sophisticated methods does not seem feasible. Consequently, the researcher must use consumption-trend analyses where one or more independent variables are used to explain changes in consumption. Projections can be made with this approach if the independent variables are more easily predicted than the dependent consumption indicators. Population was found to be the best independent variable by Zivnuska and Shideler (24). Their work, and that of McGuire and Bentley (14), projected future use for various facilities in California using ordinary least-squares techniques. The theoretical content of such efforts may be minimal, but the work can be justified on the pragmatic grounds that no better method is presently possible. In some cases, the least-squares bias from using non-structural equations for predictive purposes may not be important (22). However, one should remember that the consumption-trend approach with least-squares does build in many assumptions regarding the continuation of forces in the same patterns as those experienced during the base period. An example is seen in campgrounds where least-squares includes the continual crowding and changing of other indicators of quality. If there are some biological or physical limits to such downward shifts in quality beyond which resources cannot be restored, or a structural change is expected, direct least squares projections are not easily modified to reflect such changes.

Table I shows the equations developed for four uses of the national

forests as measured by man-days and visits. The projections made for this study are basically the same as those in the two efforts cited. The data base is now larger because this information has been available only since World War II. Equations were tried with weather, income, and other factors being introduced in single and multivariable regressions. However, colinearity between most macroeconomic variables, such as income and population, prevented statistical separation of their individual effects (as noted by Zivnuska and Shideler in their study). As the two previous projections of recreation in the California national forests also used population, it was originally planned to compare them directly. The Zivnuska-Shideler study used slightly different use data, and the state population data have been revised since 1956, so their parameter estimates are not directly comparable. McGuire and Bentley attempted to avoid the crowding effect by constructing parameter estimates of ideal forests; then used these parameters to project growth rates on all the California national forests. Consequently, comparisons of either parameter estimates or projected values would serve no purpose. Table II has the projected use rates for the years 1965, 1976 and 1980 using the most recent preliminary population projections from the State Planning Office, California Department of Finance. Rounded off, the population projections are 18,600,000 people in 1965, 25,700,000 in 1976, and 28,700,000 in 1980. These particular years have been used in several other federal and state studies concerning future resource use.

Table I. Estimated relationships between population and recreation use on California National Forests.*

Base period	Type of use	Equation	F	R^2
1947-62	Campgrounds	$Y_1 = 5.62X - 217$ (.48) (64)	135	.90
		$Y_2 = 2.34X - 148$ (.12) (16)	39	.96
1947-62	Picnic areas	$Y_1 = 1.22X - 86$ (.15) (19)	71	.82
		$Y_2 = 2.02X - 162$ (.12) (15)	304	.95
1947-62	Winter sports areas	$Y_1 = 1.16X - 63$ (.25) (33)	22	.58
		$Y_2 = 1.57X - 111$ (.22) (91)	51	.78
1950-62	Hotels and resorts	$Y_1 = 1.82X - 155$ (.09) (13)	245	.95
		$Y_2 = 1.79X - 186$ (.29) (40)	38	.76

* In the equations, X = California population (100,000), Y_1 = mandays (10,000), and Y_2 = visits (10,000). The F-test showed all relationships to be significant at the one per cent confidence level. The standard deviations of the estimated parameters are shown in parentheses below each equation. An institutional change prevents using hotels and resorts data prior to 1950.

Table II. A comparison of actual recreational use on California National Forests in 1950 and 1960 with projected levels for 1965, 1976, and 1980.*

Type of use		Actual		Projected		
		1950	1960	1965	1976	1980
Campgrounds	- mandays	3,457	6,801	8,280	12,270	13,960
	- visits	978	2,190	2,870	4,530	5,230
Picnic Areas	- mandays	460	1,311	1,410	2,270	2,640
	- visits	563	1,610	2,140	3,570	4,180
Winter sports areas	- mandays	403	1,460	1,530	2,350	2,700
	- visits	402	1,688	1,810	2,920	3,400
Hotels and resorts	- mandays	423	1,466	1,840	3,130	3,680
	- visits	169	683	1,470	2,750	3,280

* Actual and projected figures expressed in thousands.

Inches of snowfall in the Central Sierra was used as an indicator of state-wide conditions, but this was not significant when applied to winter sports use. Timing of snowfall is at least as important as the total annual fall. Dummy variables might be used to incorporate this information, but the few degrees of freedom available with such a limited data base prevent much experimentation along these lines. No efforts were made with interaction variables, but income-population joint effects might be significant. An attempt to use first differences relating annual changes in hotel and resort use between 1950 and 1960, to population changes and/or per capita income changes produced very poor statistical results with no significant relationships.

Although relatively good data are available for many of the hotels, ski areas, and other concessionaires, their usefulness is questionable. The difficulties will be elaborated when discussing the concessionaire as an economic unit, but they center upon the competitive relationships between concessionaires and totally private operations. No data of any significance are available on the level of activity of these services in general. To be useful, such data would have to be specific, and there is doubt that private operators would be willing to divulge information which might impair their competitive position. Consequently, econometric analysis is not felt to be particularly fruitful in investigating concessionaire problems.

Time Budget Approach

In the usual consumer theory, an individual's monetary income provides a constraint to his price-induced behavior, and his demand curve illustrates the quantity outcome of changes in price. Milstein (15) suggests that time rather than income may be constraint relevant for consumer behavior with respect to certain types of outdoor recreation. If the work schedule of a family head is such that he cannot take off large blocks of time for recreational activities, he and his family are prevented from partaking of cross-country national park tours despite a medium to high income. For this consumer unit, the income constraint is redundant and the time constraint explains their behavior pattern.

In recent years, many projections have estimated ten plus times present recreational use levels by the year 2000. While researchers have pointed to some extremely high predictions as ridiculous, their basis is intuitive rather than explicit. An analysis of time allocation at present, the consumer's revealed preferences, and possible time allocations in future years, can lead to a logical verification or rejection of some of the simple consumption trend projections. Certainly, income and other factors are important in discretionary expenditures such as recreation. However, discretionary time budget studies may prove enlightening for recreation planners as their personal biases affect their views of consumer desires. An example can be found in ORRRC Report 20 (17) on factors affecting the demand and participation in outdoor recreation. Pleasure driving and walking ranks first in the amount of time devoted to outdoor activity; and other uses requiring little equipment follow close behind. Activities like camping and resort vacations are at present much lower. Although changes may be expected in the future, it seems reasonable that such activities will

continue to utilize a relatively small portion of the national discretionary time-budget.

An attempt was made to use a time-budget to check the validity of the projections in Table I. Due to several factors, no significant results were obtained. The basic idea was to construct a time-budget for Californians at present, in 1976, and in the year 2000. The current percentage of time devoted to various outdoor activities provided by concessionaires and the simple camping-picnicking on the national forests was to be computed. This would be compared with the implied percentages in future years from projections of use and discretionary time. The data available for constructing a time-budget for an individual state are not adequate, and the quality is variable. Also, population and economic trends are less predictable for a small area than for the nation as a whole. The particular activities projected in the last section occupy such a small percentage of the time-budget at present that little can be said because of the data variability. As this study is oriented toward a particular problem and not recreation in general, the topic was not pursued further. However, a national study of many recreation activities and time-budgeting might be a fruitful method for obtaining reasonable predictions about the nation's future needs. Such information would be of assistance to land planners by providing more information regarding the severity of recreation supply problems.

III. SUPPLY: THE CONCESSIONAIRE

Like demand, a supply schedule represents the mutually exclusive behavior patterns relating quantity of output to price under assumptions regarding other factors being equal. The concessionaire supplies certain recreation services subject to the constraints of his production function, his permit with the Forest Service, and other possible factors. Economic theory uses utility maximization as a basic premise for both producer and consumer theory. If utility is increased by more income, then profit maximization is the rational objective of any producer. Concessionaires, like most businesses, operate in a multiperiod context so maximization of the sum of the discounted profits or present net worth is assumed. The utility function then maximized is somewhat more complex as it has time dimensions. Other objectives may also enter into the decision, and some examples are given later.

The following comments are intended to highlight the peculiar analytical position of the Service. Rather than predicting the behavior of a group of firms, the Forest Service is concerned with the behavior of a particular firm. The actions of this enterprise may ease or greatly complicate its land management activities. By explicit consideration of the complications, administrators can be more flexible regarding the unexpected problems of their concessionaires. Also, they can better specify the conditions of operation in their prospects and permits. The goal of such planning and flexibility is to obtain, from the Service's viewpoint, more nearly optimal behavior.

The particular utility functions of concessionaire owners can provide constraints in addition to those of the production function and special-use permit, or substitute another objective for maximum present net worth.

Capital constraints due to external factors are discussed in the next section; but the objectives of maintaining close family ownership can cause the same behavior patterns by limiting external funds available for investment in the concession. Profits may actually become a constraint in some cases where a standard of income is determined and something else maximized. Many small resorts and bar-restaurant establishments owned and operated by retired couples appear to behave according to an objective-constraint model of this nature.

Boulding's (4) homeostasis theory of firm behavior applies where management is isolated from ownership to the degree that profits are not the objective maximized if above a certain level. When they drop below this level, management is disturbed by some actual or potential threat to its security, and efforts are made to raise profits. Once over the specified level, extra managerial exertion declines and another objective is maximized--perhaps sales, leisure, or power. This concept suggests that multiple objectives and constraints can be treated in a similar manner. A firm may have a series of constraints which if not met will force it out of business. Minimum income to sustain the management and cover all variable and fixed costs would be such a constraint. When a concession begins operation, the short term objectives might be to maximize the number of customers served in order to build up a clientele and reputation. As business improves, present net worth maximization might become the objective, and the number of customers is then more or less irrelevant. Later, profits might become a constraint at a high level, with maximization of leisure or other goals being the objective.

Capital sources

Capital may be the most significant constraint to a majority of concessionaires. The issue is quite complex because of the special-use permist under which the concession operate. Unlike the normal tenant relationship, the concessionaire has few rights to the land or his investment in the improvements guaranteed to him explicitly. The Forest Service retains the right to terminate the permit in case of future conflicts with higher uses. While the chances of termination are probably small, provided the operator meets the specified terms, the permits are generally of a short term nature with a length of five to 20 years. Providing no higher use appears likely and the performance is satisfactory, the permits will be renewed at the end of each period. Lending institutions, such as commercial banks, have no specific claim on the improvements in case of financial difficulties or the arrival of a higher use. Thus, they have been reluctant to lend to concessionaires. In part this reflects a lack of knowledge concerning the actual operation of concessionaires and the relationship to wildland management. Where intensive capital investment is involved, recreation is a "high" use of the land. Consequently, other wildland activities such as timber or forage production would not become higher uses in the present economic environment. Highway right-of-way conflicts may be significant--at least Highways 40 and 50 have involved some problems. Occasionally a higher use develops and the Forest Service replaces a relatively small operation with a larger, perhaps more diversified, concession. In the specific cases with which the author is familiar, the present operator was given the first chance to provide the expansion desired, providing he had met the past permit requirements to a satisfactory degree.

Recent developments suggest that traditional barriers to capital flow

into the concessionaire sector are breaking down. The substantial loan by Wells Fargo Bank to Yosemite Park and Curry Company, the Yosemite National Park concessionaire, is an example of the learning process that is occurring (16). Although national park concessionaires are monopolists and not typical Forest Service operators, Curry and Company is probably more like the diversified concessionaire that will be desirable in the future than the small concerns often found today. Lack of knowledge concerning the institutions, the particular individuals involved, and the markets in the near future, all tend to disfavor concessionaires in the conservative eyes of bankers and other formal lending institutions.

Capital may also be generated through various corporate approaches with friends or local residents purchasing the stock. The success of this approach is largely a function of management and its ability to convince others of the "true" risks involved. Personal loans, personal savings, and other private sources of capital are drawn upon for concession operations. While some concerns have succeeded in raising capital, on the whole the various formal and informal capital markets are not favorable toward this type of investment. In part this reflects a reasonable evaluation of the risks due to weather, unknown managerial potential, and volatile consumer preferences. It also reflects a lack of knowledge concerning a relatively new area of economic activity.

The success of a few concessionaires in rasing capital and fruitfully investing it in outdoor recreation prompts some generalizations. As in most investments, dispersion reduces risk if the variability of returns in the various areas are not highly correlated. Also, as much of outdoor recreation is by families, a variety of possible activities is likely to be more appealing to the entire consumer group. If a concessionaire or private

recreation enterprise can provide facilities for a wide variety of age classes and interests, he will be more competitive in attracting customers, particularly on a return basis. The facility which is very specialized and provides as an example, only skiing for the moderately good to excellent enthusiast, will depend upon a restricted group for its clientele. Such specialization may pay off, especially if there is a growing market. However in many geographical areas and in many forms of recreation activity, specialization of this type involves great risk of failure. With dispersion comes size, which in itself is an attribute reducing the risk of failure. Economic reverses generally have a less disasterous effect on large companies than on small ones.

Casual observation by many researchers and public land managers indicates that the managers attracted to concessionaire operations are not an exceptionally talented group. Data do not exist to evaluate concessionaire management by any standard of performance, so no objective judgment can be made regarding the current state of talent. However, this seems to be an area warranting further research using techniques from other social sciences, and some educational effort may also be justified to improve management.

In attempting to make potential concessionaires and their capital sources aware of the opportunities, care must be taken not to be overly optimistic. One recent Department of Agriculture publication (19), concerning the opportunities for farm owners to invest in recreation developments, contains a series of case studies about successful rural recreation enterprises. It did not have any detailed studies of failures, and in fact gave the impression that there were no such occurrences. This approach is not suitable for improving the performance of concessionaires who may already be overly optimistic. There is certainly a place for educational

effort with capital lending institutions, and it would have a secondary benefit of feeding information back to the Service regarding objections held against the present permit system.

Uncertainty

Uncertainty is a major problem for many concessionaires, although it is not unique to this economic area. As it is based upon expectations, the present net worth has risk or uncertainty dimensions as well as an expected value. Knight (11) made a distinction between risk and uncertainty based upon whether or not actuarial values could be computed, but there is a continuum between the extremes of known probabilities and no knowledge whatsoever. The concessionaire's knowledge of the future lies somewhere in this continuum, so Knight's definition is not used. Uncertainty and risk are considered to be the same situation, with subjective probabilities rather than actuarial values.

The complications of uncertainty, when either objective or subjective probabilities can be generated, have often been discussed since von Neumann and Morganstern (22) first issued their Theory of Games and Economic Behavior. This literature reemphasizes the place of utility maximization in economic theory, although the reference is now to expected utility which acknowledges that attempts to maximize are not always successful. The particular relationship of expected utility to expected monetary outcome defines a good deal of the behavior observed toward risk by firms.[4] This

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[4] See Friedman and Savage (7) for a more complete development of this point as well as an excellent review of the central ideas of von Neumann and Morganstern. Baumol (2), chapters 17, 18, and 19, has an elementary review of this work and the place of game theory in decision-making.

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has implications for the proper organizational structure of concessions.

Because individuals have different preferences for risk, all firms will not behave alike in fields where the short-run outcome is quite variable. Utility maximization underlies all economic behavior, so the inconsistencies between the actions of various economic groups are the result of

different preferences for risk and uncertainty. Differing evaluations of possible outcome dispersion could be important, but these also reflect risk preference to some degree. As an example, management is not trying to maximize profits, but utility to themselves. Profit maximization is the optimum method of maximizing management's utility if given the perfect certainty and ownership-management identity of most economic abstractions. The direct model of profit maximization will predict firm behavior, at least regarding the direction of movement, if the assumptions are not significantly violated in reality.

If the management of a concessionaire is not the same as the ownership, managerial behavior may be most unpredictable. This is due to the particular position of risk in the manager's utility map. Hyperconservative or irresponsible managerial behavior can result from the utility of the individual manager not being closely related to the economic outcome of the firm. Consider a manager who has little if any economic interest in a concession except his salary. If he is not personally involved with the concession's future and has opportunities elsewhere, he may not work extraordinarily hard to insure the firm's success. Also, cases can be found where the principle owner and promoter of a concession has pyramided his capital backing so he has little to lose if the operation does not succeed. Due to the preferred nature of the stock sold, he receives high returns if the concession is successful. This may encourage an extremely venturesome attitude toward the entire business because of the potential payoffs to the manager. As in all fields, there are many people attracted to concessions whose behavior patterns reflect high personal preference for hard, earnest work, regardless of ownership-managerial relations. However, to insure responsibility to the owners, the consumer, and the Forest Service, there

are some definite advantages to tying the manager's fortunes to those of the concession. A requirement that the manager be a dominant owner would be too strict, but the organizational structure should be specified in the permit to maintain ownership control over management. Safeguards should be included to prevent pyramid financial structures which greatly reduce the risk of financial loss to the manager and promoter of a concession.

Uncertainty arises from many forces, and several factors are completely external to the system. Natural occurrences such as poor snow years, droughts, or excessively wet summer seasons are examples of weather factors which adversely affect concessionaires. Technological changes can affect them as well. Improvements in machinery and ideas must be adapted at some pace comparable to what others are doing in order to maintain a competitive position. Such may put a great strain on the capital resources of a firm which faces the constant possibility of a totally bad year.

Size and diversification have been mentioned as factors which reduce the chance of failure. The Forest Service should have concessionaires develop broadly based facilities which are adequately financed, and require evidence of prior aptitude in such operations. Larger complexes require attracting concessionaires with more capital backing, but the reduction in uncertainty due to size and diversification would attract capital more readily than the small enterprises often currently found. While the size of concessionaires will of necessity grow larger, they will still be, relatively speacking, small businesses. This would recognize that what was once a small business is often not suitable for providing services in the present economic syste. There will always be a place for the rather small business in this system to provide gas station service, groceries, and such, and

many of the operators will be successful. However, a tendency toward larger concessions and tighter control on the managerial quality accepted by the Service would reduce the uncertainty for all concerned.

The economic behavior of public enterprise is always uncertain because of its dependence upon political change. Any reduction in uncertainty regarding Forest Service behavior will aid in attracting managerial talent and capital to concessionaire enterprises. Lengthening the permit period and greater guarantees of security against termination are two factors to be considered. The cost of change in terms of reduced flexibility by the Service or in terms of commiting public resources to long-term private development must be weighed against the alternative consequences. This will clarify the choices possible.

The Service, the consumer, and external forces are not the only sources of economic uncertainty. The concessionaires themselves could do more to improve the relationships by better meeting the terms of the permits and the needs of clientele. The present concessionaires association could attempt to take a more active part in controlling concessionaire performance through censure or other actions against members who do not meet their obligations. However, the past efforts of such groups in other economic sectors have often been disappointing due to their lack of real enforcement power.

IV. SUPPLY: THE FOREST SERVICE

The following discussion investigates some of the possible Forest Service objectives and their implications in an effort to clarify the policy and administrative alternatives. The desired conclusion is to provide emphasis for flexibility where objectives and constraints can be modified to "best" cope with any given situation. Many of the proposals have supporters who feel these objectives should be held by the Service. Some of the objectives discussed appear in the Manual or various administrative regulations. No value judgment is made specifically, but clarification of the results of certain models emphasizes the need for a flexible approach to problems.

One goal that could be postulated for the Service is present net worth maximization. Under such a scheme, any products which were marketable would be sold at a market price. Many of the problems with so-called intangibles would be resolved by prices existing which cleared the market. A major complication of such a mechanism is that the Forest Service would be a monopolist or dominant oligopolist in many stumpage, forage, and recreation markets. This misallocation of resources due to monopoly is more intense when the demand is inelastic, as is generally true of range, timber, and recreation. Perfect competition may not necessarily represent a social optimum, but there is no reason to expect an improvement by extremely imperfect competition. Also, prediction becomes more difficult as competition is less perfect.

The continuing flavor of social benefit that surrounds land management agencies and their historical establishment in the ferment of the conservation era are fundamental reasons why profit maximization is not the dominant

objective. "The greatest good for the greatest number in the long run" may not have any analytical content, but the phrase does contain a spirit of social responsibility which significantly influences the behavior of the Forest Service. As a part of the executive branch of government, the Service implements several broad mandates from Congress and the President regarding social welfare. The Employment Act of 1946, the desire for stable prices, and the current emphasis on economic growth are examples of general policies which affect the behavior of all government agencies to some degree. Consequently, the profit maximization objective does not appear a fruitful one for further exploration.

One of the conflicts which is readily apparent in literature on Forest Service policy is between National and local interests. The Service has always been concerned with the problems of local communities, and the multiple-use plans currently being prepared illustrate this interest by their careful description of local socio-economic conditions. One possible objective is local economic stability. The degree of achievement could be measured by the reduction of variability in per capita income, hours worked, or other indicators of individual economic activity. Today, forest communities are often categorized as economically distressed because of declining or volatile lumber markets which cause instability. Many rural counties in California are attempting to resolve this economic decline and at the same time cope with the growing impact of recreation. Some areas hope that recreation will be the salvation of their declining employment and income problems. Where Forest Service concessionaires supply an important segment of the recreation services, Service policies will have a significant effect on recreation's local economic impact. A policy of deliberately low permit charges with requirements for low consumer prices

may attract new customers or retain the current clientele. On the other hand, such an approach would have definite repercussions for the private landowners providing or planning to provide recreation services. If low Forest Service concessionaire prices make private investment unattractive, a recreation complex with collective attractiveness to urban consumers may not develop. This would be a loss to the community, and the private and concessionaire investors.

A related goal would be maximum local economic growth, which might be the objective of areas more economically optimistic than the depressed sawmill communities. Although relevant in the stability case, this proposal accentuates the government's direct involvement with a process essentially that of "robbing Peter to pay Paul." In most cases of recreation development, the gains of one locale are the losses of another. While a county government can justify the spending of public funds to attract customers away from other counties, there are economic and political questions regarding the Forest Service contributing to this process. This situation is is closely related to another problem of government control of any resource allocation problem. In the Manual (20, 2334.2, point 2), reference is made to the fact that the Service will not permit commercial developments "either solely for the purpose of establishing a commercial enterprise or where satisfactory public service is provided on nearby private or other public lands." Any concessionaire will most likely be competitive with other enterprises, even if they are located at some distance. Definition of the term "satisfactory" involves nothing more than arbitrary judgment by a Forest Service decision-maker, for no criteria can be given which are not basically subjective.

There are several additional reasons why concessionaires on the national

forests cannot be considered in the same realm as business in general, or even directly compared with private suppliers of the same services. First, the costs of failure in the private sector are mainly absorbed by private individuals, but there are direct social costs when a concession fails due to administrative activity. Second, a further cost of local ill-will is often incurred by the failure of a concessionaire, and this impairs all Forest Service programs to some extent. Third, the Service is usually amoung the largest, if not the largest, local landowner. It is responsible for utilizing its resources to further local interests insofar as possible without violating national obligations. No matter how this concept is defined in operational terms, it means that the Service cannot abdicate its responsibility for carefully considering the consequences of any major action on a significant problem.

Maximum welfare is sometimes put forth by members of the Forest Service or its partisans as the proper goal of the land management policies and programs. Without further definition, this does not provide operational decision criteria. The often quoted public interest also has its difficulties as a criterion. To utilize criteria representing social welfare or social improvement, specific factors must be put forth as objectives. The goals of stability or growth have already been suggested. Maximum utilization of recreation services might be used which would lead to permits and concessions designed to minimize consumer costs for a given quantity and quality of service. Redistribution of income by facilities designed for the use of low income groups at nominal cost could also be suggested. The "highest use", a term often used as an objective in multiple use planning, has the same operational difficulty. Highest use might be defined in terms of numbers of people directly deriving benefits per acre per year.

This would probably favor most forms of intensive recreation, whether provided by public or private investment sources, and would be antagonistic to wilderness use or the growing of many commercial forest products.

The definition of who benefits would need careful consideration because of the number of indirect values received from national forest resources. As an example, the people who receive their livelihood from working in wood processing plants dependent upon Forest Service stumpage could be included. How much weight should be given to market values as opposed to non-market values? The economist can lend some clarity to the consequences of adapting various schemes for weighting values, although his arguments for any particular approach must be of a normative nature.

The responsibility for selecting the objectives and making decisions lies with the Forest Service. The degree of acceptability is decided by the complex political process. While they are directed by legislative mandates and by their heritage, Service administrators have considerable latitude in selecting objectives. To be operational and to be of benefit in some social sense, the Forest Service had to develop a self-concept. Not only is the public better served by this approach, but indivudual administrators are better able to make decisions consistent with the overall goals of the organization. Kaufman (10) states that on the whole the Service does this well, but the present study suggests that the development of goals is still in flux with regard to concessionaires.

Forest Service constraints

In any bureaucracy the constraints become complex because of the institutional nature of authority, the political structure, and the significance of personal relationships. The Forest Service operates within a context of laws and regulations which are probably not fully understood by any single person. The Forest Service Manual was discussed thoroughly by Kaufmand (10) in his analysis of the District Ranger, which illustrates how this document is a restraint on individual behavior and on the organization as a whole. Diaries, inspections, and the many other obligations of employees and branches provide more constraints. Personalities are a factor not to be discounted in both on-the-ground interpretation and political maneuvers in Washington. The budget procedure is also a complex and dynamic force affecting behavior.

Information is a constraint often overlooked by the economist, and this factor greatly affects the Forest Service policy toward concessionaires as well as other management activities. Because perfect knowledge is not available regarding either the future or the present, the uncertainty complications noted for the concessionaire also apply to the Service. It is difficult to place concessions in the overall management scheme due to a lack of knowledge concerning key relationships between uses. Economists often plea for more research, particularly by other disciplinarians, to provide information that is needed to apply concepts like joint production theory. However, decisions are made and must be made without this knowledge. The economist could probably contribute more by studying resource allocation decisions under the constraints of little information and great uncertainty.

Political restraints or just plain lack of time may prevent some

objectives from being met as the regulations specify. As an example, many Forest Service officials acknowledge that concessionaires often deviate substantially from the specifications of the permit without provoking overt disciplinary action. An operator may be constantly admonished to improve by the local administrator. However, if the deviations are within a tolerable level, no action may be justified in light of the administrative complications involved or the antagonistic reaction expected from the local community. In such cases, questions of what is an objective and what is a constraint are not easily answered. As in the homeostasis theory of the firm, one might hypothesize an interchange between objectives and constraints triggered by certain variables such as local or Congressional feelings.

A somewhat different type of constraint is determined by the relationship of the organization structure of the Service to its economic position in the market. Because it is a public enterprise and often dominates resource markets, the Forest Service does not have the possibility of behaving as if it were in a perfect market. This constraint can be revealed while analyzing the structure of each market situation involved in the concession system.

In any economic competition, perfect or other wise, each participant's behavior is constrained by the actions of the others. There are conflicts of interest in any exchange because buyers wish to minimize costs and sellers desire to maximize profits. The conflicts seen between the concessionaire and the consumer are not particularly unusual in the economy as a whole. They are still highly regarded by society as the not necessarily perfect, but often reliable, invisible hand. The conflicts observed between capital sources and the concessions are somewhat unusual because of the nature of the concessionaire's tenure on his national forest site. However,

the rationing of capital away from this activity is not unusual in reality, although not readily explained by orthodox economic theory.

The relationship of the concessionaire to his landlord, the Forest Service, is the most unusual found in terms of the conflicts normally considered under economic theory. Certainly the relationships of private and public enterprise are no longer unusual in real life since the advent of a large peacetime military establishment. Although some interesting discussion has evolved from considering this investment mix, the field of political economy is just beginning to respond to such challenges. The rule generally advocated by economists is to simulate the behavior of a perfectly competitive system where the value of the marginal product equals its cost. It is implied that this will somehow optimize welfare. Unfortunately several problems reduce the practicality of this approach.

Any economic activity involves some income redistribution either in an absolute sense or in the growth rate of relative shares. This may not be consistent with other income redistribution schemes which in some sense may reflect the goals of society. There are other barriers to economic efficiency which are essentially political constraints, as is income distribution. Society is willing to give up efficiency to gain other goals, but not in any necessarily consistent fashion.

A key practical problem is the cost of obtaining information which would indicate where marginal costs equals price with a reasonable degree of accuracy. Economic theory is generally set in a static world. The policy problems which face land managers in concessionaire permits and other long-term planning situations are concerned with a dynamic world with constantly changing tastes, preferences, and technology. The expanding economy envisioned will require larger and/or different product mixes from the

forest resource. The most appropriate policy for the forest resource must be based upon a thorough analysis of uncertainty and dynamics. Using economic concepts in a static and sterile sense tarnishes the discipline's repute and gives the Forest Service inaccurate and inappropriate advice regarding its possible alternative actions.

Even if the above problems could be resolved and the simulation of perfect competition was vindicated as the ideal policy for the Service, there is reason to believe that the economically monolithic Forest Service could not operationally duplicate the behavior of a perfectly competitive system made up of a myriad of small decision-making units. The shape of the production surface, the prices of inputs and outputs, the social responsibility, and the credo of a large federal organization are substantially different than the aggregate of small firms. Consequently, the rule marginal cost equals price is not an appropriate criterion for public resource allocation without detailed specifications of the mechanisms generating costs and returns.

Policy-making

This study has been concerned throughout with policy-making, but two final comments are noted here. First, flexibility has been suggested to be desirable, but there is some question regarding the proper administrative level for decision-making. Currently, any concessionaire investment over 50,000 dollars must be approved by the Washington office. This may be the best place for flexible review of major decisions on concessionaires, because top echelon administrators are more insulated from local pressures and interest groups. However, 50,000 dollars is not a very large establishment, and more of a grass roots approach might be desirable where local interests and goals could be examined prior to establishing or expanding a concession. Subsequent review by the Washington office would insure compatibility with other decisions and goals, but decisions could be made in a local or regional office.

The sale policy for special use permits is presently defined in the Manual (20, see 2700), and specifications are made regarding the returns to the Treasury for various types of concessionaire operations. There is flexibility in the percentage of gross required as payment annually, and in the timing payments in case of financial difficulty due to adverse weather and other exogenous factors. The rate of payment is to be "commensurate with the value of the use" (20, 2704, point 3), with "value" implied to be in the sense of market prices. If other criteria are involved, such as local stability or growth, the term value will need considerable development. This is another reason for a thorough study of recreations's position in creating and contributing to the economic environment of rural areas.

The second comment has to do with the opportunity cost concept. It

was recently explored in two different contexts by Hoch (8) and Amidon and Gould (1). Hoch described the potential of this concept of forgone timber market values as a cost of wilderness establishment for operational use by decision-makers. Amidon and Gould developed some rough transformation functions between timber production and recreation in physical terms for three California national forests. Although the value system is left implicit, the decision-maker does have some idea of the physical costs of a decision to put a particular area in one use or another.

The Service can use the concept in the sense that Hoch, Amidon, and Gould suggested by evaluating the opportunities forgone by removing a given site from other production processes and establishing a concession on it. Timber production may be lost, or other uses may incur additional costs due to factors like increased population and traffic. The expression of these costs can be in monetary or other terms. It may well be that a combination of monetary and physical terms is the only feasible system.

Forest Service decision-makers could use this approach in another sense. If there was a question of what value system to use, the consequences of using two or more systems could be compared. The outcomes, if different, would be the opportunity costs of selecting another value system. The choice between value systems could be made more clear and explicit, although it would still be based upon subjective judgment. Opportunity costs in this sense could be used to aid the joint selection of ends and means. Lindbloom (12) feels that ends are seldom separated from means in policy-making. This philosophy has operational merit for the Forest Service because of its dynamic environment.

V. SUMMARY

This analysis is not complete and it has not resolved the problems of a public-private investment mix such as the concessionaire sytem. Four general points were discussed.

1. Any problems of concessionaires must be defined in terms of the goals of the system.

2. The demand for concessionaire services is not easily defined, but all evidence indicates a high income elasticity; therefore this sector is expected to increase rapidly. The current policy of using private capital is expected to continue, so any problems found at present will become more severe if not investigated and resolved in the near future.

3. The Forest Service cannot view its decisions as neutral toward concessionaire behavior, and the economic results are not directly comparable to free market activities. With a flexible approach, more educational effort, and a better understanding of management responses to permit requirements, the Service can improve its goal achievement.

4. Many objectives may be considered for concessionaire policy, and several of them center upon criteria reflecting economic stability or growth in local areas. The political and economic results from the Forest Service aiding growth in a given area when this may hurt the economies of other regions needs investigation. An approach such as the opportunity cost concept may have value in choosing between value systems.

A few suggestions can be made regarding a research program to provide the necessary information for formulating concessionaire policies during the next two decades.

1. A thorough study is needed on the economic impact of outdoor recreation in forested regions. This study should be conducted in representative

areas throughout the United States to define (a) the overall impact that has been found in the past and might be expected in the next 20 years; (b) the place of concessionaire operations in creating this impact; (c) the consequences of present policies in the expected future development; and (d) the potential for more flexible policies or new goals directed more toward local economic growth or stability rather than toward returns to the Treasury. Such a research program has been proposed by the Pacific Southwest Forest and Range Experiment Station for the northern California forested counties, but it has not been funded as yet. To be fully effective, similar studies would be needed in other sections of the country with high national forest use. The results of such studies would define the changes in present policies needed to serve the public interest (however defined) in the next decades.

2. An interview study of capital sources would reveal to administrators and policy-makers how severe the current capital rationing is, and the degree to which modifications can be obtained through educational effort and/or policy changes. While the public interest must be protected, it is possible that performance criteria in the permit can more adequately insure this than the present short term permits. Tenant rights for 30 years or longer, provided permit specifications were met, would probably enhance the evaluation of concessionaire investments by formal money markets.

3. A study of the concessionaire management's response to permit specifications, internal organization, and capital structure would provide guides to developing improved special use permits. Particular emphasis should be put on measures to insure ownership control over management and sound managerial-financial relationships.

Any future research should be pragmatically phrased to view concessions

as a part of the over-all outdoor recreation situation, the general problem of wildland planning, and the common difficulties faced by many forested regions regarding rural decline and stagnation. Although these are broad and diverse areas, the Forest Service policy for their concessionaires will have some impact on each. Rational policy-making requires a better knowledge and understanding of the impact on each sector.

Literature cited

1. Amidon, Elliot L., and Gould, Ernest M., Jr. 1962. "The Possible Impact of Recreation Development on Timber Production in Three California National Forests." U.S.F.S. Pacific Southest Forest and Range Experiment Station. Technical Paper 68. 21 pp.

2. Baumol, William J. 1961. Economic Theory and Operations Analysis. Englewood-Cliffs, N. J.: Prentice-Hall, Inc.

3. Beazley, Ronald I. 1961. "Some Considerations for Optimizing Public Forest Recreational Development and Value." Jour. Forestry 59:644-650.

4. Boulding, Kenneth E. 1950. A Reconstruction of Economics. New York: John Wiley and Sons, Inc.

5. Clawson, Marion. 1959. "Methods of Measuring the Demand for and Value of Outdoor Recreation." Resources for the Future, Reprint Number 10.

6. Friedman, Milton. 1949. "The Marshallian Demand Curve." Jour. Political Economy 57(6).

7. Friedman, Milton, and L. J. Savage. 1952. "Utility Analysis of Choices Involving Risk." Reprinted in Readings in Price Theory. Chicago: Richard D. Irwin, Inc.

8. Hoch, I. J. 1962. "Economic Analysis of Wilderness Areas." Chapter 6 in ORRRC Study Report 13. Washington; Government Printing Office.

9. Johnson, Hugh A. 1962. "Private Enterprise in the Development of Outdoor Recreation." (Talk given to Western Farm Economics Association, Reno, Nevada, August 6-8, 1962.

10. Kaufman, Herbert. 1960. The Forest Ranger. Baltimore: The Johns Hopkins Press.

11. Knight, Frank H. 1921. Risk, Uncertainty and Profit. New York: Houghton Mifflin Co. 381 pp. (1948 reprint).

12. Linbloom, Charles E. 1959. "The Science of Muddling Through." Public Administration Review 79-88.

13. Marshall, Alfred. 1936. Principles of Economics. 8th Ed. London: Macmillan and Co.

14. McGuire, John R., and William R. Bentley. 1958. "The Outlook for Recreation use of the National Forests in California in 1976 and 2000--a Preliminary Report." Unpublished interoffice manuscript, Division of Forest Economics, Pacific Southwest Forest and Range Experiment Station.

15. Milstein, David W. 1960. "An Economic Framework for the Study of Leisure." (Paper presented at 10th Annual meeting of Society for Study of Social Problems, New York.)

16. Moore, Arthur L. 1962. Paying for Recreation Facilities. ORRRC Study Report 12. Washington: Government Printing Office.

17. Mueller, Eva and Gerald Gurin. 1962. Participation in Outdoor Recreation; Factors Affecting Demand Among American Adults. ORRRC. Study Report 20. Washington: Government Printing Office.

18. Prewitt, Roy A. 1949. The Economics of Public Recreation; an Economic Study of the Monetary Evaluation of Recreation in the National Parks. U.S. National Park Service, Washington, D. C.

19. U.S. Department of Agriculture. 1962. Rural Recreation: A New Family Farm Business. Washington: Government Printing Office.

20. U.S. Forest Service. 1958 (and more recent). Forest Service Manual and Handbook, Chapters 2300 and 2700. Washington.

21. U.S. Forest Service, Region 5. 1962. "Charging for Use of National Forest Recreation Sites." Unnumbered administrative study. San Francisco.

22. Von Neumann, John, and Oskar Morgenstern. 1953. Theory of Games and Economic Behavior, revised edition. Princeton: Princeton University Press.

23. Waugh, Fredrick V. 1961. "The Place of Least Squares in Econometrics." Econometrica 29(3): 386-396.

24. Zivnuska, John, and Ann Shideler. 1957. "A Projection of the Recreation Use of Public Forest Areas in Californi to 1965." Forest Science 3(3): 210-219.